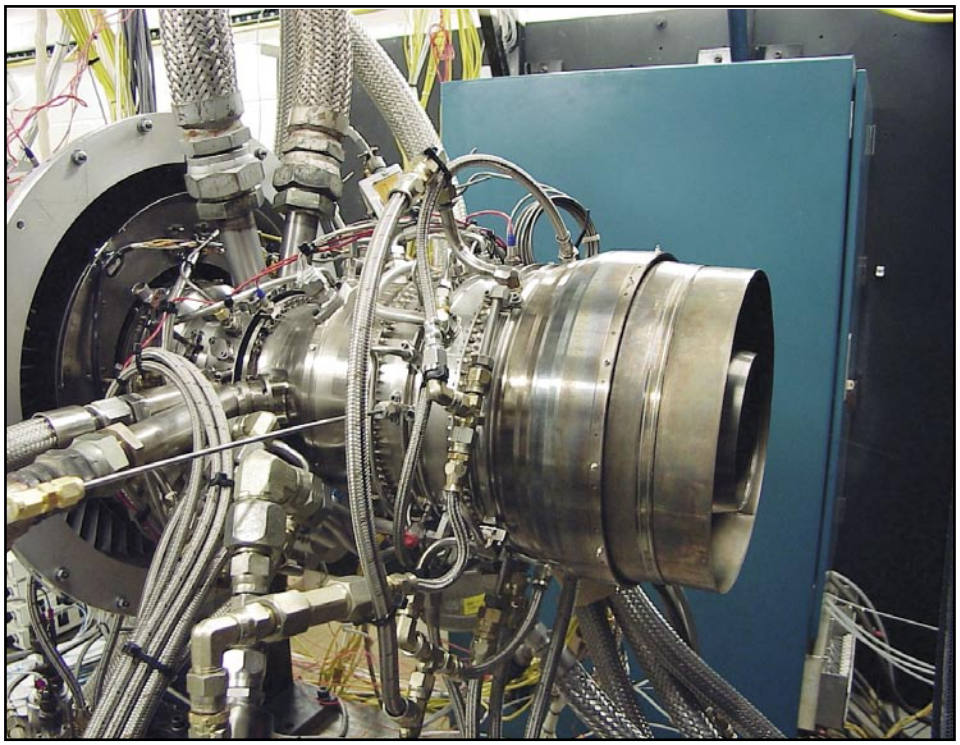
Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

AFRL'S TURBINE ENGINE TESTING REDUCES ENGINE SFC



Engineers tested the XTC87/2 demonstrator engine as part of the Integrated High-Performance Turbine Engine Technology (IHPTET) program aimed at improving turbine engine technology and capabilities. The IHPTET program shows significant payoffs in durability, mission reliability, and affordability. Additionally, IHPTET design practices will lead to longer inspection intervals and lower maintenance costs. The program also provides the basis for continued preeminence in civil aircraft engine development, since the technology is almost entirely dual use in nature.

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Accomplishment

AFRL engineers completed XTC87/2 Joint Expendable Turbine Engine Concepts (JETEC) demonstrator engine testing. As part of the IHPTET program, the JETEC effort focuses on development of expendable and limited-life-use engines for applications such as nonrecoverable missiles and unmanned air vehicles. The successful XTC87/2 demonstrator test effort advances state-of-the-art turbine engine technology by achieving a 23% reduction in the engine's specific fuel consumption (SFC), resulting in increased range and mission capability. This achievement represents a significant step in meeting SFC-related goals. The successful testing also demonstrated the steady-state performance, durability, and robustness of uncooled ceramic turbine blades at temperatures as much as 870°F above the IHPTET baseline.

Background

The IHPTET program centers on an aggressive technology plan to overcome barriers in the development of affordable, advanced, high-performance turbine engines. IHPTET is producing revolutionary advancements in turbine engine technologies due to the synergistic effect of combining advanced material development, innovative structural design, and improved aerothermodynamics.

Propulsion
Emerging Technologies

Additional Information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (05-PR-10)